UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

July 24, 2002

MEMORANDUM

FROM: Kathryn Boyle, CoChair IIFG

and

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TO: Robert Forrest, Chief
Minor Use, Inerts, and Emergency Response Branch

SUBJECT: IIFG Decision Documents on Reassessing Exemptions from the Requirement of a Tolerance for the Mineral Acids (Hydrochloric, Carbonic, Phosphoric, and Sulfuric) and their Ammonium, Calcium, Ferrous, Ferric, Magnesium, Potassium, Sodium, and/or Zinc Salts

Collectively these Decision Documents cover four mineral acids and the salts of these acids. The individual Decision Documents are: (1) Hydrochloric Acid and Salts, (2) Salts of Carbonic Acid, (3) Phosphoric Acid and Salts, and (4) Sulfuric Acid and Salts. The Inert Ingredient Focus Group reassessment is based on various conclusions of the FAO/WHO Joint Expert Committee on Food Additives, conclusions of various FDA GRAS (Generally Recognized As Safe) Assessments, information previously used by OPP as part of the reregistration process, and other information available on government websites.

In total 46 exemptions from the requirement of a tolerance in 40 CFR 180 are reassessed. This total consists of 18 in the phosphoric acid document, nine in the hydrochloric acid document, six in the carbonic acid document, and 13 in the sulfuric acid document.

INERT INGREDIENT FOCUS GROUP

DECISION DOCUMENT for

Salts of Carbonic Acid

Petition No.: no

Tolerance Reassessments?: yes

Chemical Category/Group: mineral acid and salts

The following describes the various ways that salts of carbonic acid are used.

Table 1: Use Pattern (pesticidal - inert ingredient)

Chemical Name	PC Code	40 CFR 180.1001	Inert Use Pattern (Pesticidal)	Current Inert List
ammonium bicarbonate	873401	(c)	surfactant, suspending agent, dispersing agent	4B
magnesium carbonate	873503	(c), (e)	anticaking agent, conditioning agent	4B
potassium carbonate	873504	(d)	buffering agent	4B
sodium bicarbonate	873505	(c)	neutralizer	4A

There is also a tolerance exemption for sodium carbonate 40 CFR 180.2.

The tolerance exemptions for calcium carbonate were reassessed in the IIFG Decision Document "Weathered Materials", dated January 31, 2002. Calcium carbonate is a List 4A

Potassium bicarbonate (40 CFR 180.1177) and sodium bicarbonate (40 CFR 180.1176) are used as active ingredients. (Note that both tolerance exemptions were established post-FQPA.) Potassium bicarbonate is used in six products at 204 use sites, which includes many food crops, as well as ornamentals and turf. It is used against 45 pests including mildew and leaf spot. Sodium bicarbonate is in one product which is a product used only to formulate other pesticides. There are no longer any EPA-registered active ingredient uses for any of the other above-listed

carbonate salts.

It is noted that there is information in this document on other carbonate salts for which tolerance exemptions do not currently exist. These data are being used as surrogate data.

Table 2: Use Pattern (FDA GRAS)

Chemical	GRAS Citation	GRAS Uses
ammonium bicarbonate	21 CFR 184.1135	dough strengthener, leavening agent, pH control agent, texturizer
ammonium carbonate	21 CFR 184.1137	leavening agent, pH control agent
magnesium carbonate	21 CFR 184.1425	anticaking and free-flow agent, flour treating agent, lubricant and release, nutrient supplement, pH control agent, processing aid, synergist
potassium bicarbonate	21 CFR 184.1613	formulation aid, nutrient supplement, pH control agent, processing aid
potassium carbonate	21 CFR 184.1619	flavoring agent and adjuvant, nutrient supplement, pH control agent, processing aid
sodium bicarbonate	21 CFR 184.1736	(no limitations specified)
sodium carbonate	21 CFR 184.1742	antioxidant, curing and pickling agent, flavoring agent and adjuvant, pH control agent, processing aid

Sodium bicarbonate also is used in food contact surface sanitizing solutions under 21 CFR 178.1010.

Table 3: Use Pattern (non-pesticidal)

Chemical	Uses
ammonium bicarbonate	in baking powder formulations; in cooling baths; fire extinguishers; manufacture of porous plastics, ceramics; manufacture of dyes and pigments; in compost heaps to accelerate decomposition; as **fertilizer**; for defatting textiles; in cold wave solutions; in chrome leather tanning; to remove gypsum from heat exchangers and other processing equipment.
magnesium carbonate	used to prepare high purity magnesium compounds in the paint and printing inks industries; manufacture of fireproofing, fire-extinguishing, flooring, and polishing compounds; fillers and smoke suppressants in the plastics and rubber industries; USP grade is used as an additive to table salt to keep it free flowing; a bulking compound in powder formulations; an antacid.
potassium carbonate	manufacture of soap, glass, pottery, smalts and many potassium salts; in analytical chemistry; Television glass accounts for a substantial portion of the consumption of potassium carbonate because the potassium salt is more compatible with the lead, barium, and strontium oxides contained in these glasses than is sodium carbonate.
sodium bicarbonate	Leavening agent in baking powder and food ingredients; component of soaps, detergents and pharmaceuticals; agent in leather tanning; textile manufacturing; paper manufacturing; fire extinguishers; in industrial and household chemicals

It should be noted that ammonium bicarbonate can be used as a fertilizer. Plants need various elements (metals and non-metals) for proper growth. Especially for agricultural crops, plants are supplied these elements as part of chemical fertilizers. The most important elements for plant growth are nitrogen, phosphorus, and potassium. Other metals needed in the soil for plant up-take are calcium, magnesium, iron, and trace elements such as zinc. Ammonium bicarbonate can be intentionally added to growing agricultural crops as needed to promote plant growth.

Assessment of the Salts of Carbonic Acid

The ammonium, sodium, potassium, and magnesium salts of carbonic acid are being assessed as a group due to their chemical similarities. However, these salts all contain either the bicarbonate ion (HCO_3^{-1}) or the carbonate ion (CO_3^{-2}), and thus share some common chemistries. A major focus of this assessment is the work previously performed by FDA in assessing the safety of these chemicals as food additives.

1. Physical/Chemical Properties:

The physical and chemical properties of the salts of carbonic acid are described in the May 7, 2002 EFED Assessment. See attached.

2. Information Sources:

The following information was used in performing this assessment: The available information consisted of information retrieved from various websites, such as,

- EPA (www.epa.gov),
- NIOSH, (www.cdc.gov/niosh/ipcsneng/neng1333.html), (www.cdc.gov/niosh/ipcsneng/neng0969.html),
- TOXNET (www.toxnet.nlm.nih.gov.),
- WHO (www.inchem.org/documents/jecfa/jecmono/v17je02.htm)

Various FDA GRAS Assessments were also used.

3. NIOSH (National Institute for Occupational Safety and Health)

The NIOSH International Chemical Safety Card for ammonium hydrogen carbonate indicates that a TLV (Threshold Limit Value) has not been established. The chemical can irritate the skin and the respiratory tract.

The NIOSH International Chemical Safety Card for magnesium carbonate indicates a TLV (Threshold Limit Value) of 10 mg/m^3. The chemical may have effects on the lungs if the magnesite (the naturally occurring form of magnesium carbonate) contains more than 1% crystalline silica.

4. Acid Characteristics

An acid is a substance that when dissolved in water yields H^+ ions. The increase of the concentration of the H^+ ions lowers the pH. Mineral acids contain a non-metal such as phosphorus, nitrogen, sulfur, or chlorine which may or may not be combined with oxygen. When combined with oxygen, these anions can be referred to as oxyanions. Strong acids are those acids that when dissolved completely transfer their H^+ ions to water. Others acids such as carbonic are referred to as weak acids: they exist in solution as a mixture of acid molecules and various ions formed by the dissociation of the acid molecule. The predominant anions for carbonic acid are bicarbonate (HCO_3^{-1}) at pHs below 8 and carbonate (CO_3^{-2}) at pHs above 10.

5. Cations: Sodium, Potassium, and Magnesium

Generally, when any salt of an acid, such as carbonic acid, is dissolved in water, dissociation yields the anions, which are negatively charged, and a positively charged cation. In the human body, these salts tend to dissociate and thus, for the most part, react in the body as the anion and the cation.

Metals such as sodium, magnesium, and potassium are required for proper functioning of human biological systems. For risk assessment purposes an important feature of these metals is that overall the body does have an effective means of processing them. The primary means of exposure to these cations is ingestion. Four of the most common cations required for functioning

of human biology are: sodium, potassium, calcium and magnesium. Chemically, sodium and potassium belong to the same chemical family: calcium and magnesium belong to a different chemical family.

Sodium:

The average human body burden of sodium is approximately 20 grams (g) for a 70 kilogram (kg) adult. The sodium cation is necessary for the nerves and muscles to function properly. It is the principal cation of extracellular fluid, and helps to maintain the body's water balance. These electrolytes, the electrically charged ions in the body fluids, consist to a great extent of sodium and potassium. There is no Recommended Dietary Allowance (RDA) for sodium.

Potassium:

The average human body burden of potassium is approximately 140 g for a 70 kg adult. The potassium cation is important in regulating blood pressure, regulating cellular water content, maintaining proper pH balance, and transmission of nerve impulses. It helps to regulate the electrical activity of the heart and muscles. The potassium RDA is 900 mg/day.

Magnesium:

The average human body burden of magnesium is approximately 20 g for a 70 kg adult. The magnesium cation is also used in building bones. It plays a role in releasing energy from muscles and regulating body temperature. The RDA for magnesium is 310 to 320 mg/day for adult females and 400 to 420 mg/day for adult males with the RDA increasing with increasing age.

6. Ammonium Salt:

Ammonium carbonate salts dissociate to form the positively charged ammonium cation (NH_4^+). Humans cannot convert atmospheric nitrogen to any form that can be used as part of any of the various metabolic cycles. Therefore, reduced nitrogen (NH_4^+) has to enter the body from an outside source. These sources are the nitrogen-containing amino acids in protein which are consumed daily as part of the diet. Although the human body can produce some amino acids, ten amino acids are considered "essential" amino acids, i.e., they must be consumed in the diet.

Generally the body works to maintain a balance of nitrogen intake and nitrogen excretion. The estimated daily ammonia intake through food and drinking water is 18 mg. In contrast, 4000 mg of ammonia per day are produced endogenously in the human intestine.

Ammonia and the ammonium ion are integral components of normal human metabolic processes. Ammonia is released following deamination that occurs when protein is used by the body for energy production. The liver converts ammonia via the urea cycle into urea. According

to FDA in the “Evaluation of the Health Aspects of Certain Ammonium Salts as Food Ingredients” (1974), “the normal liver so readily detoxifies ammonium ion from alimentary sources that blood concentrations of ammonium salts do not rise to the levels necessary to evoke toxic response.” Approximately 80% of the body’s excess nitrogen is eliminated through the kidneys as urea, approximately 25 to 30 grams per day.

7. Toxicological Profile Table

The Agency has not reviewed any of the toxicological studies in the following table for any of the salts of carbonic acid. The reviews of these studies were obtained from Toxnet, as well as other government websites.

Table 4: Toxicological Profile

Chemical	Toxicity	Other Information
Ammonium carbonate	Contact with eyes or skin causes irritation, if inhaled will cause difficulty in breathing; Ammonium compounds used as fertilizers are a toxicological hazard when livestock have access to residues or pools of solution on a pasture	CERCLA Reportable Quantity: greater than 5000 lb (2270 kg); Designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act
Ammonium bicarbonate	Inhalation may cause respiratory irritation; Contact with eyes or skin causes irritation; There appears to be a more rapid excretion of ammonia following ammonium bicarbonate infusions, which result in higher unionized ammonia levels in blood compared with those following ammonium chloride infusions; Mutagenicity: Ames assays strains TA 97 and TA102 with and without rat liver activation: Negative.	CERCLA Reportable Quantity: greater than 5000 lb (2270 kg); Designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act

Magnesium Carbonate	Repeated doses may cause diarrhea, which may cause fluid and electrolyte imbalance; Can cause hypermagnesemia in those with severely impaired renal function; Can alkalinize the urine; Magnesium salts are poorly absorbed from the intestine; Normal range of magnesium serum concentrations 1.5 to 2.5 mEq/L	1974 Production in US: 5.4×10^6 kg (1227 tons), with another 2% of that amount imported that year.
Potassium Carbonate	Oral LD_{50}: Rat 1870 mg/kg; Mouse 2570 mg/kg; Inhalation LC_{50}: Rat > 500 mg/m^3; Irritating to skin , mucous membrane of eyes and upper respiratory tract; Irritant and caustic action similar to that of potassium hydroxide, but less severe; Negative in the Ames assays with two strains of *Salmonella typhimurium* (TA 97 and TA102) with and without activation	Common Name: Potash.
Sodium Bicarbonate	Developmental Toxicity: No effects found up to 580 mg/kg in mice, 340 mg/kg in rats, and 330 mg/kg in rabbits; Negative in the Ames assays with two strains of *Salmonella typhimurium* (TA 97 and TA102) with and without activation; Daily doses up to 25 mEq/kg were administered to patients for 3 weeks, changes in plasma electrolyte concentration were not remarkable, plasma total carbon dioxide increased by only 5 mEq/L with largest dose, considerable weight gain was most prominent effect; No reports of toxicity caused by the ingestion of baking soda; Daily dose limited to 200 mEq in persons under 60 year age and 100 in those older; Adults with normal renal function can tolerate up to 1700 mEq daily with minimal symptoms; Contra indicated for alkalosis (metabolic or respiratory), chloride loss due to vomiting or continuous GI suction, or hypocalcemia; Eliminated principally in the urine, alkalizes it	Common Name: Baking soda. 1984 Production in US: 3.2×10^8 kg (72727 tons), with another 5% of that amount imported same year.

Sodium Carbonate	Oral LD_{50}: rat 2880 to 4090 mg/kg; Inhalation LC_{50}: rat 2300 mg/m^3 (2 hour); Inhalation LC_{50}: mouse 1200 mg/m^3 (2 hour); Skin irritation: mild; Eye irritation : mild-moderate; Aqueous solutions are strongly alkaline; Concentrated solutions tend to produce local necrosis of mucous membranes; Sensitivity reactions may occur from repeated topical use; Ingestion of large quantities may produce corrosion of GI tract, vomiting, diarrhea, circulatory collapse, death; Dusts of vapors of sodium carbonate may cause irritation of mucous membranes with subsequent coughing and shortness of breath; A primary irritant at concentrations below 15% and caustic at concentrations above approximately 15%, depending on contact time, areas of exposure, and other factors; Developmental toxicity test on gestation days 6 to 15 in rats, mice and rabbits at levels of 3.4 to 340 mg/kg: no effects on nidation or survival of the dams or fetuses.	Common name: washing soda

8. Agency Review of Toxicity Data for Potassium Bicarbonate and Sodium Bicarbonate

Sodium bicarbonate has an acute oral LD_{50} greater than 5000 mg/kg in rats, an acute dermal LD_{50} greater than 2000 mg/kg in rabbits, and an acute inhalation LC_{50} greater than 4.74 mg/L in rats. It causes minimal eye irritation and slight dermal irritation in rabbits, and is a dermal non-sensitizer in guinea pigs.

Potassium bicarbonate has an acute oral LD_{50} greater than 2825 mg/kg in rats, an acute dermal LD_{50} greater than 2000 mg/kg in rabbits, and an acute inhalation LC_{50} greater than 4.96 mg/L in rats. It causes slight eye irritation and slight dermal irritation in rabbits, and is a dermal non-sensitizer in guinea pigs.

9. FDA GRAS (Generally Recognized As Safe) Assessments

The FDA Assessment is titled "Evaluation of the Health Aspects of Carbonates and Bicarbonates as Food Ingredients" (1975). "Carbonates and bicarbonates are used in foods as neutralizers and leavening agents. These anions occur in body fluids and tissues as the result of normal metabolic processes and are important in the control of acid-base balance. Except for calcium, most....are fairly soluble in water." The possible average daily intake of added carbonates (i.e., those used as food additives) at that time were:

Table 5: Daily Intake

Chemical Name	0 to 5 Months (mg/kg)	6 to 11 Months (mg/kg)	12 to 23 Months (mg/kg)	2 to 65+ Years (mg/kg)
ammonium bicarbonate	3	12	18	8
ammonium carbonate	8	34	35	12
magnesium carbonate	2	8	12	6
potassium bicarbonate	11	2	<1	---
potassium carbonate	3	15	22	10
sodium bicarbonate	29	171	251	80
sodium carbonate	1	6	6	2

Potassium and Sodium Carbonate and Bicarbonate

In the FDA Assessment acute, short-term, and developmental toxicity studies and mutagenicity studies were evaluated for potassium carbonate and bicarbonate. For sodium carbonate and bicarbonate acute, short-term, and developmental toxicity studies, and mutagenicity and metabolism studies were evaluated. There was also some human data. No chronic studies were identified.

> "The results of acute toxicity and short-term feeding experiments are not readily extrapolated in determining toxic levels for carbonate salts consumed by humans. Treatment of gastric or peptic ulcers in patients with large amounts of carbonate salts in various forms has been utilized for many years and only rarely have deleterious results of changes of acid-base balance been reported. When the human respiratory and renal functions are normal, the mechanisms for disposing of bicarbonate intake in large amounts through excretion appear to be highly efficient."

> "There is no evidence in the available information on ... potassium carbonate, potassium bicarbonate, sodium carbonate, [or] sodium bicarbonate ... that demonstrates or suggests reasonable grounds to suspect a hazard to the public when used at levels that are now current or that might reasonably be expected in the future."

Ammonium Carbonate and Bicarbonate

The FDA Assessment is titled "Evaluation of the Health Aspects of Certain Ammonium Salts as Food Ingredients" (1974).

> "Ammonia and ammonium ion are integral components of normal metabolic processes and play an essential role in the physiology of man. Although there have been no significant feeding studies specifically designed to ascertain the safety threshold of ammonium compounds as food ingredients, numerous metabolic studies have been reported in the scientific literature. Extrapolation of these finding to the concentrations of ammonium compounds normally present in foods does not suggest that there would be untoward effects at such levels."

Magnesium Carbonate

The FDA Assessment is titled "Evaluation of the Health Aspects of Magnesium Salts as Food Ingredients" (1976). Magnesium is (1) a dietary essential, (2) involved in many metabolic reactions, (3) important in electrolyte balance, and (4) present in fruits, vegetables, grains, milk, meat and fish. No chronic toxicity data were available. The "status of magnesium as a ubiquitous and essential dietary ingredient for the maintenance of homeostatic and bioenergetic mechanisms leads to the opinion that none of the available evidence suggests any probable hazard when any of the GRAS compounds of magnesium is used as a food ingredient." The conclusion was reached that there was no available information on magnesium chloride to demonstrate, or suggest

"reasonable grounds to suspect, a hazard to the public when ... used at levels that are now current and in the manner now practiced, or which might reasonably be expected in the future."

10. FAO/WHO Expert Committee on Food Additives

Ammonium carbonate and ammonium hydrogen carbonate (previously known as ammonium bicarbonate) were evaluated previously in 1966. The evaluation was performed using the available data on ammonium carbonate and ammonium bicarbonate as well as surrogate data on ammonium chloride and various carbonate salts. Acute, short-term, and developmental toxicity studies, mutagenicity studies, and human studies were used.

> "These compounds (ammonium ion and bicarbonate ion) are normal metabolites in man. Although specific toxicological data for ammonium carbonate and ammonium bicarbonate are limited, extrapolation of results from studies with ammonium compounds (primarily ammonium chloride) and with sodium or potassium carbonate provide a basis for evaluation. Clinical studies in man show that administration of high doses of ammonium chloride or of sodium bicarbonate results in changes in the acid-base balance. This is the normal physiological response. The levels of ammonium carbonate and bicarbonate in the diet from food additive use are extremely small compared to the levels required to cause physiological changes and pose no toxicological hazard."

The estimate of acceptable daily intake for man is "not specified." "The statement 'ADI not specified' means that, on the basis of the available data (toxicological, biochemical, and other), the total daily intake of the substance, arising from its use or uses at the levels necessary to achieve the desired effect and from its acceptable background in food, does not, in the opinion of the Committee, represent a hazard to health. For this reason, and for the reasons stated in individual evaluations, the establishment of an acceptable daily intake (ADI) in mg/kg bw is not deemed necessary."

11. Human Health Hazard Characterization:

When dissolved in water, salts of carbonic acids form basic solutions. The toxicity (the irritation and caustic effects) of these chemicals tend to resemble those of the hydroxides, although to a lesser extent. In solution these chemicals could effectively perform as buffering agents, pH adjusters, or neutralizers in pesticide products. This is indicative of the use of small amounts of the chemical that are incorporated in a pesticide product to modify and/or control the pH. After the pH adjustment is performed, the aqueous solution of carbonate salts would be neutralized. If used as an active ingredient the chemical is subject to FIFRA registration requirements and various labeling language. These chemicals must be used and applied according to good manufacturing or good agricultural practices. However, there are no significant adverse effects, to the general public or any population subgroup from consumption of residues of the ammonium, potassium, magnesium, and sodium salts of carbonic acid resulting from pesticide

product uses.

As a group these salts of carbonic acid constitute a group of chemicals with many uses including direct use in the food supply. Various ammonium, magnesium, potassium, and sodium salts of carbonic acid have been reviewed by both FDA and WHO. These chemicals have been used in the food supply for a number of years.

The available toxicity data indicates that the human body metabolizes carbonates, ammonium, magnesium, potassium, and sodium ions through well-understood pathways. In fact, the metals are necessary human nutrients. Given the long history of safe use, the available toxicity data, and an understanding of the human body's ability to metabolize these chemicals, and the evaluations by FDA and WHO, the IIFG believes that ammonium, potassium, sodium and magnesium carbonate salts are of low oral toxicity.

12. Type of Risk Assessment/Risk Characterization:

The toxicity of these chemicals derives from the irritation and caustic effects; therefore, a qualitative assessment for all pathways of human exposure (food, drinking water, and residential) is appropriate.

Given the widespread occurrence of these chemicals in the existing food supply, the amounts that can be applied to food as a result of a use in a pesticide product would not be expected to significantly increase the existing amounts in the food supply. There is no available information on any of the chemicals considered in this document indicative of a human health hazard resulting from the EPA-regulated uses as well as the FDA GRAS uses to the general public or any population subgroup. No additional information is needed to assess their safety.

13. Sensitivity of Infants and Children:

Overall, when considering the oral pathway (ingestion), these chemicals have low toxic potential. At this time, there is no concern for potential sensitivity to infants and children. A safety factor analysis has not been used to assess the risk. For the same reasons the additional tenfold safety factor is unnecessary.

14. Environmental Fate and Ecotoxicity Assessment/Characterization:

In general, the constituents of the salts of carbonic acid are commonly found in soil and water in the environment suggesting that releasing low levels of these chemicals would not normally be expected to adversely effect wildlife or water resources. Large releases may adversely affect wildlife and water resources either directly or indirectly. Direct effects may result from exceeding toxicity thresholds of specific chemicals. Indirect effects may be manifested through disrupting ecosystems through altering pH or increasing availability of algal nutrients.

The magnitude of the pH changes, and thus the magnitude of effects, would depend on a

number of factors including the amount of material released and the buffering capacity of the exposed soil or water. Normal aquatic pHs range from 5 to 9. EPA's Office of Water recommended water quality criteria for pH are 6.5 to 9 for freshwater and 6.5 to 8.5 for saltwater. At higher or lower pH aquatic life is expected to be adversely impacted. In addition, rapid changes in pH can also be detrimental to aquatic life.

The magnesium, potassium and sodium salts of carbonic acid should dissociate in water resulting in a positively charged (cation) metal in solution. Dissociation is frequently dependent on pH, with lower (more acidic) pHs resulting in higher levels of dissociation and greater solubility. Aquatic toxicity of metals varies with the species of metal and its concentration. Metals do not degrade and thus are permanent in the environment. They are likely to dissipate by being sequestered in soil, sediment, and plants.

15. Cumulative Exposure:

Section 408(b)(2)(D)(v) requires that, when considering whether to establish, modify, or revoke a tolerance, the Agency consider "available information" concerning the cumulative effects of a particular pesticide chemical's residues and "other substances that have a common mechanism of toxicity." The chemicals considered in this document are structurally related; however, these salts of carbonic acid are low toxicity chemicals. Therefore, the resultant risks separately and/or combined should also be low. EPA does not have, at this time, available data to determine whether these pesticide chemicals have a common mechanism of toxicity with other substances or how to include these pesticide chemicals in a cumulative risk assessment.

16. Determination of Safety:

Based on its review and evaluation of the available information, EPA concludes that there is a reasonable certainty that no harm will result to the general population, and to infants and children from aggregate exposure to residues of ammonium, sodium, potassium, and magnesium salts. Therefore, the following exemptions from the requirement of a tolerance are reassessed: In 40 CFR 180.2 sodium carbonate. In 40 CFR 180.1001 (c) ammonium bicarbonate, magnesium carbonate, and sodium bicarbonate. In 40 CFR 180.1001 (d) potassium carbonate. In 40 CFR 180.1001 (e) magnesium carbonate.

17. List Reclassifications:

The following List reclassifications are made or confirmed:

Ammonium bicarbonate: List 4B
Ammonium carbonate: List 4B
Magnesium carbonate (less than 1% crystalline silica): List 4A given its similarities to calcium carbonate
Potassium Bicarbonate: List 4A given its similarities to sodium bicarbonate
Potassium Carbonate: List 4B given its similarities to potassium hydroxide

Sodium Bicarbonate: List 4A considering its use as baking soda
Sodium Carbonate: List 4B given its similarities to potassium carbonate

Given the chemical similarities, and that data/information on the following chemicals was used as surrogate data for tolerance reassessment, exemptions from the requirement of a tolerance may be established for ammonium carbonate, potassium bicarbonate, and sodium carbonate.

The following table lists the various chemical names, CAS Reg. No., and CAS Index Names that will be used for listing in 40 CFR.180. Note that both the anhydrous and the hydrated forms are included. The Agency sees no reason to distinguish between these chemicals given that the only difference is the attachment of the water molecules.

Chemical Name	**CAS. Reg. No.**	**Chemical Abstacts Index Name**
ammonium bicarbonate	1066-33-7	Carbonic acid, monoammonium salt (8CI, 9CI)
ammonium carbonate	10361-29-2	Carbonic acid, ammonium salt (8CI, 9CI)
ammonium carbonate	506-87-6	Carbonic acid, diammonium salt (8CI, 9CI)
magnesium carbonate	546-93-0	Carbonic acid, magnesium salt (1:1) (8CI, 9CI)
potassium carbonate	584-08-7	Carbonic acid, dipotassium salt (8CI, 9CI)
potassium hydrogen carbonate {KHCO3}	298-14-6	Carbonic acid, monopotassium salt (8CI, 9CI)
potassium carbonate trihydrate {2K2CO3 .3H2O}	18662-52-7	Carbonic acid, dipotassium salt, trihydrate (8CI)
sodium bicarbonate {NaHC03}	144-55-8	Carbonic acid monosodium salt (8CI, 9CI)
sodium carbonate {Na2CO3}	497-19-8	Carbonic acid disodium salt (8CI, 9CI)
sodium carbonate decahydrate {Na2CO3 . 10H2O}	6132-02-1	Carbonic acid disodium salt, decahydrate (8CI, 9CI)
sodium carbonate heptahydrate {Na2CO3 . 7H2O}	56399-31-6	Carbonic acid disodium salt, heptahydrate (9CI)
sodium carbonate monohydrate {Na2CO3 . H2O}	5968-11-6	Carbonic acid disodium salt, monohydrate (8CI, 9CI)
sodium sesquicarbonate {Na2CO3 . NaHCO3 . 2H2O}	533-96-0	Carbonic acid, sodium salt (2:3) (8CI, 9CI)

Attachment: